Solid-state Twin Timers

H3CR-F

DIN 48 x 48-mm Solid-state Twin Timers

- Wide power supply ranges of 100 to 240 VAC and 48 to 125 VDC respectively.
- Independent ON- and OFF-time settings. Furthermore, combinations of long ON- or OFF-time and short OFF- or ON-time settings are possible.
- Fourteen time ranges from 0.05 s to 30 h or from 1.2 s to 300 h depending on the model to be used.
- Models with a flicker ON start or flicker OFF start are available.
- Easy sequence checks through instantaneous outputs for a zero set value at any time range.
- Only 80 mm long when panel-mounted with a socket.
- 11-pin and 8-pin models are available.

RC

Ordering Information

Operating modes	Supply voltage	0.05 s to 30 h models		1.2 s to 300 h models	
		11-pin models	8-pin models	11-pin models	8-pin models
Flicker OFF start	100 to 240 VAC	H3CR-F	H3CR-F8	H3CR-F-300	H3CR-F8-300
	24 VAC/DC				
	12 VDC				
	48 to 125 VDC				
Flicker ON start	100 to 240 VAC	H3CR-FN	H3CR-F8N	H3CR-FN-300	H3CR-F8N-300
	24 VAC/DC				
	12 VDC				
	48 to 125 VDC				

Note: Specify both the model number and supply voltage when ordering.
Example: H3CR-F 24 VAC/DC
└── Supply voltage

Model Number Legend:

H3CR - □ □ □ **-** □
1 2 3 4

1. Classification
F: Twin timers

2. Configuration
None: 11-pin socket
8: 8-pin socket

3. Twin Timer Mode
None: Flicker OFF start
N: Flicker ON start

4. Specified Type
300: Long time range (1.2 s to 300 h) type

■ Accessories (Order Separately)

Name/specifications		Models
Flush Mounting Adapter		Y92F-30
		Y92F-73
		Y92F-74
Mounting Track	**50 cm (l) x 7.3 mm (t)**	PFP-50N
	1 m (l) x 7.3 mm (t)	PFP-100N
	1 m (l) x 16 mm (t)	PFP-100N2
End Plate		PFP-M
Spacer		PFP-S
Protective Cover		Y92A-48B
Track Mounting/ Front Connecting Socket	**8-pin**	P2CF-08
	11-pin	P2CF-11
Back Connecting Socket	**8-pin**	P3G-08
	11-pin	P3GA-11
Hold-down Clip	**For PL08 and PL11 Sockets**	Y92H-7
	For PF085A Socket	Y92H-8

Specifications

■ General

Item	H3CR-F	H3CR-F8	H3CR-FN	H3CR-F8N
Operating mode	Flicker OFF start		Flicker ON start	
Pin type	11-pin	8-pin	11-pin	8-pin
Operating/Reset method	Time-limit operation/Time-limit reset or self-reset			
Output type	Relay output (DPDT)			
Mounting method	DIN track mounting, surface mounting, and flush mounting			
EMC	Emission Enclosure: EN55011 Group 1 class A Emission AC Mains: EN55011 Group 1 class A Immunity ESD: IEC801-2: 4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference: ENV50140: 10 V/m (80 MHz to 1 GHz) (level 3) Immunity Conducted Disturbance: ENV50141: 10 V (0.15 to 80 MHz) (level 3) Immunity Burst: IEC801-4: 2 kV power-line (level 3) 2 kV I/O signal-line (level 4)			
Approved standards	UL508, CSA C22.2 No.14, LR/NK Conforms to VDE0435/2021, VDE0110 Conforms to EN50081-2, prEN50082-2			

■ Time Ranges

0.05 s to 30 h Models

Time unit		s (sec)	x10 s (10 s)	min	h (hrs)
Setting	1.2	0.05 to 1.2	1.2 to 12	0.12 to 1.2	
	3	0.3 to 3	3 to 30	0.3 to 3	
	12	1.2 to 12	12 to 120	1.2 to 12	
	30	3 to 30	30 to 300	3 to 30	

Note: Instantaneous output is available at any time range. To obtain instantaneous output, set to below 0.

1.2 s to 300 h Models

Time unit		x10 s (10 s)	x10 min (10 min)	h (hrs)	x10 h (10 h)
Setting	1.2	1.2 to 12	1.2 to 12	0.12 to 1.2	1.2 to 12
	3	3 to 30	3 to 30	0.3 to 3	3 to 30
	12	12 to 120	12 to 120	1.2 to 12	12 to 120
	30	30 to 300	30 to 300	3 to 30	30 to 300

Note: Instantaneous output is available at any time range. To obtain instantaneous output, set to below 0.

■ Ratings

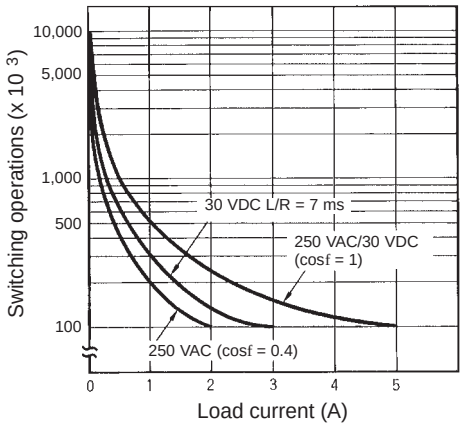
Rated supply voltage (see note)	100 to 240 VAC (50/60 Hz),12 VDC, 24 VAC/DC (50/60 Hz), 48 to 125 VDC
Operating voltage range	85% to 110% of rated supply voltage; 90% to 110% with 12-VDC models
Power reset	Minimum power-opening time: 0.1 s
Power consumption	100 to 240 VAC: approx. 10 VA; 12 VDC: approx. 1 W; 24 VAC/DC: approx. 2 VA (AC), approx. 1 W (DC); 48 to 125 VDC: approx. 1.5 W
Control outputs	Contact output: 5 A at 250 VAC, resistive load (cosϕ = 1)

Note: A power supply with a ripple of 20% max. (single-phase power supply with full-wave rectification) can be used with each DC Model.

■ Characteristics

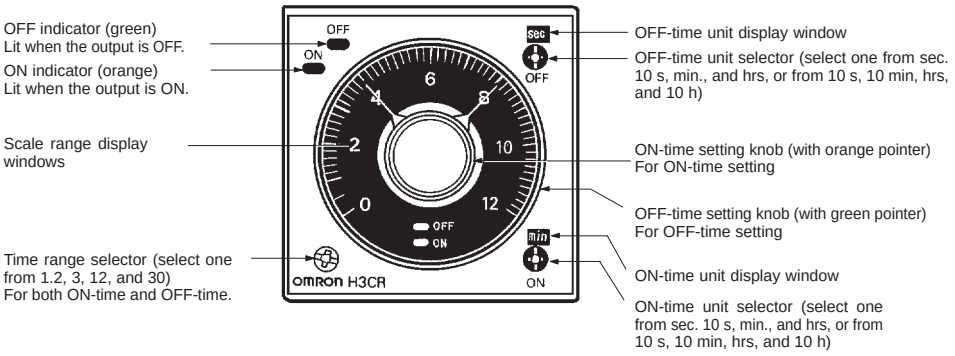
Accuracy of operating time	±0.3% FS max. (±0.3% FS ±10 ms in ranges of 1.2 and 3 s)
Setting error	±5% FS ±0.05 s max.
Reset time	0.1 s max.
Influence of voltage	±0.5% FS max. (±0.5% FS ±10 ms in ranges of 1.2 and 3 s)
Influence of temperature	±2% FS max. (±2% FS ±10 ms in ranges of 1.2 and 3s)
Insulation resistance	100 MΩ min. (at 500 VDC)
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min (between current-carrying metal parts and exposed non-current-carrying metal parts) 2,000 VAC, 50/60 Hz for 1 min (between control output terminals and operating circuit) 1,000 VAC, 50/60 Hz for 1 min (between contacts not located next to each other)
Impulse withstand voltage	3 kV (between power terminals) for 100 to 240 VAC, 48 to 125 VDC 1 kV for 12 VDC, 24 VAC/DC 4.5 kV (between current-carrying terminal and exposed non-current-carrying metal parts) for 100 to 240 VAC, 48 to 125 VDC 1.5 kV for 12 VDC, 24 VAC/DC
Noise immunity	±1.5 kV (between power terminals), square-wave noise by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise) ±400 V for 12 VDC
Static immunity	Malfunction: 8 kV Destruction: 15 kV
Vibration resistance	Destruction: 10 to 55 Hz with 0.75-mm single amplitude each in three directions Malfunction: 10 to 55 Hz with 0.5-mm single amplitude each in three directions
Shock resistance	Destruction: 980 m/s^2 (100G) each in three directions Malfunction: 98 m/s^2 (10G) each in three directions
Ambient temperature	Operating: –10°C to 55°C (with no icing) Storage: –25°C to 65°C (with no icing)
Ambient humidity	Operating: 35% to 85%
Life expectancy	Mechanical: 20 million operations min. (under no load at 1,800 operations/h) Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 1,800 operations/h)
Case color	Light Gray (Munsell 5Y7/1)
Enclosure ratings	IEC: IP40
Weight	Approx. 100 g

Engineering Data



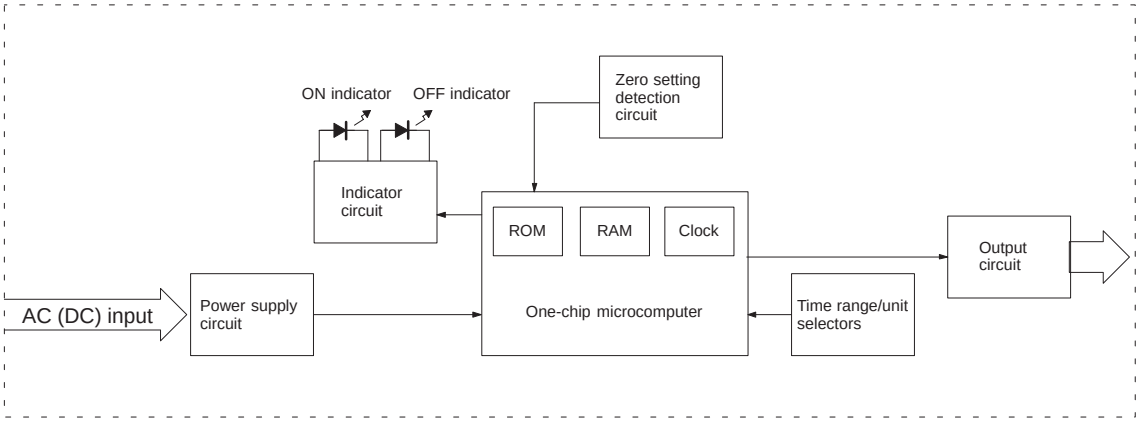
Reference: A maximum current of 0.15 A can be switched at 125 VDC (cosf = 1) and a maximum current of 0.1 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected.
The minimum applicable load is 10 mA at 5 VDC (failure level: P).

Nomenclature


OFF indicator (green)
Lit when the output is OFF.
ON indicator (orange)
Lit when the output is ON.
Scale range display windows
Time range selector (select one from 1.2, 3, 12, and 30)
For both ON-time and OFF-time.
OFF-time unit display window
OFF-time unit selector (select one from sec. 10 s, min., and hrs, or from 10 s, 10 min, hrs, and 10 h)
ON-time setting knob (with orange pointer)
For ON-time setting
OFF-time setting knob (with green pointer)
For OFF-time setting
ON-time unit display window
ON-time unit selector (select one from sec. 10 s, min., and hrs, or from 10 s, 10 min, hrs, and 10 h)
OMRON H3CR

Operation

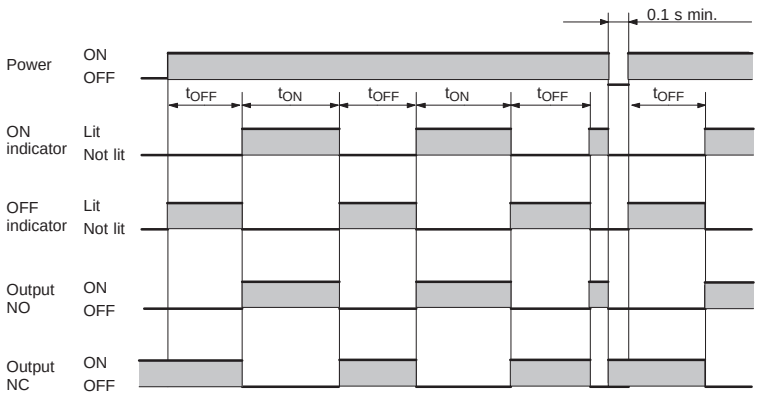
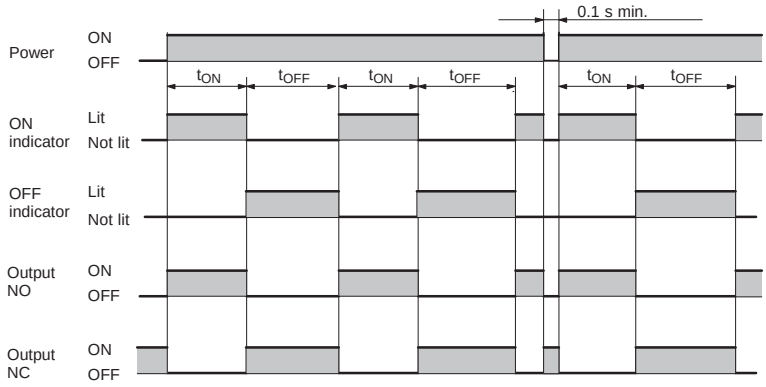
■ Block Diagrams



■ I/O Functions

Inputs		---
Outputs	**Control output**	Outputs are turned ON/OFF according to the time set by the ON- and OFF-time setting knob.

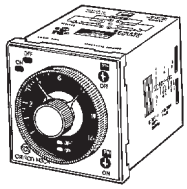
■ Timing Chart

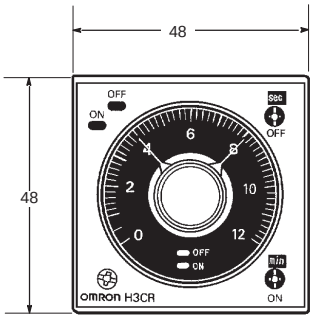
Operating mode	Timing chart
Flicker OFF start	 t_{ON}: ON set time t_{OFF}: OFF set time
Flicker ON start	 t_{ON}: ON set time t_{OFF}: OFF set time

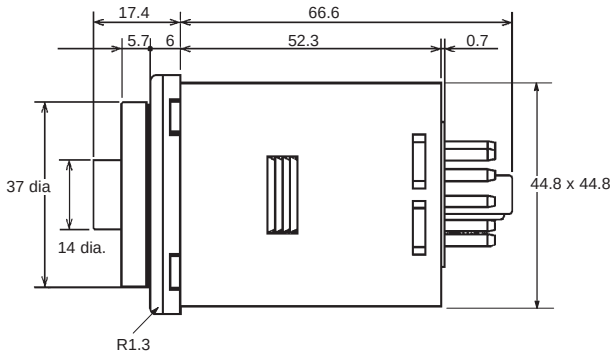
Dimensions

Note: All units are in millimeters unless otherwise indicated.

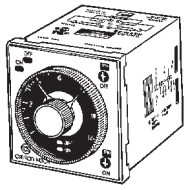
H3CR-F
H3CR-FN
H3CR-F-300
H3CR-FN-300

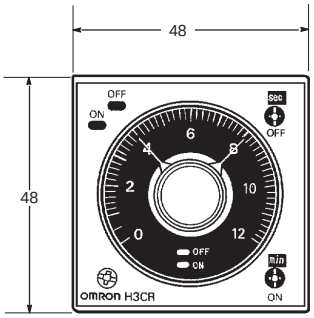


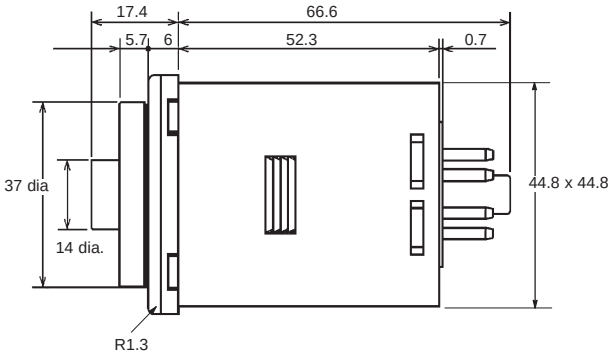




H3CR-F8
H3CR-F8N
H3CR-F8-300
H3CR-F8N-300



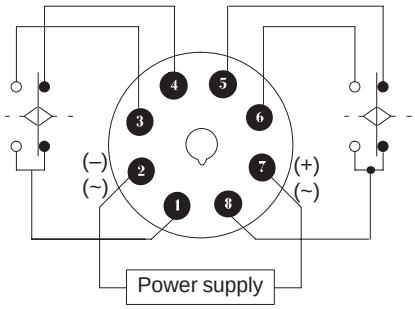




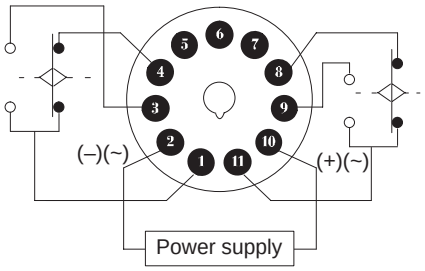
Installation

■ Terminal Arrangement

H3CR-F8
H3CR-F8N
H3CR-F8-300
H3CR-F8N-300



H3CR-F
H3CR-FN
H3CR-F-300
H3CR-FN-300



Note: Leave terminals 5, 6, and 7 open.
Do not use them as relay terminals.

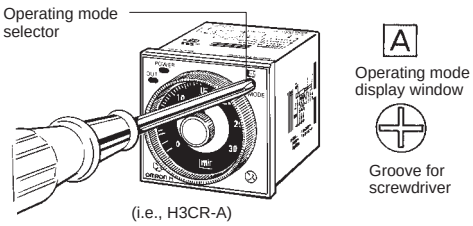
Operation

Note: The undermentioned is common for all H3CR-F/G/H models.

■ Basic Setting

Setting of Selectors

The selectors can be turned clockwise and counterclockwise to select the desired time unit, time range, or operating mode.
Each selector has a snap mechanism that secures the selector at a given position. Set the selector at a position at which it is secured. Do not set it midway between two securing positions or a malfunction could result from improper setting.

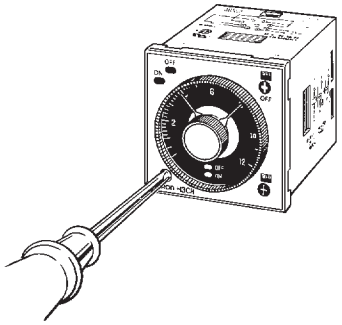


(i.e., H3CR-A)

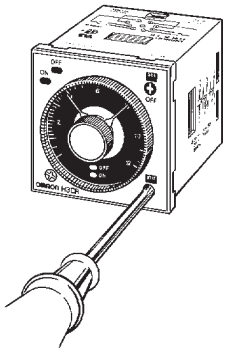
Selection of Time Unit and Time Range

- **H3CR-F Twin Timers**

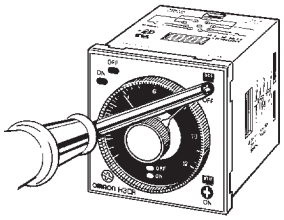
A time range (0 to 1.2, 0 to 3, 0 to 12, or 0 to 30) is selected for ON- and OFF-time using the time range selector at the lower left corner of the front panel, and the selected time range appears within the plastic frame of the time setting knob (= scale range display windows).



For ON-time, the desired time unit (sec, 10 s, min, and hrs, or 10 s, 10 min, hrs, and 10 h) is indicated in the ON-time unit display window at the lower right corner of the front panel and can be changed by turning the ON-time unit selector located below the ON-time unit display window.

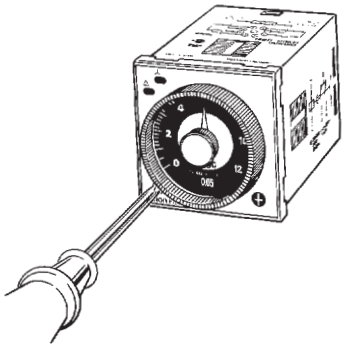


For OFF-time, the desired time unit (sec, 10 s, min, and hrs, or 10 s, 10 min, hrs, and 10 h) is indicated in the OFF-time unit display window at the upper right corner of the front panel and can be changed by turning the OFF-time unit selector located below the OFF-time unit display window.

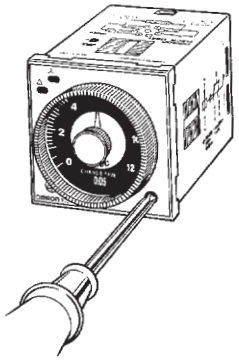


- **H3CR-G Star-delta Timers**

A star operation time range (0 to 6, 0 to 12, 0 to 60, or 0 to 120 seconds) is selected with the star operation time range selector at the lower left corner of the front panel.

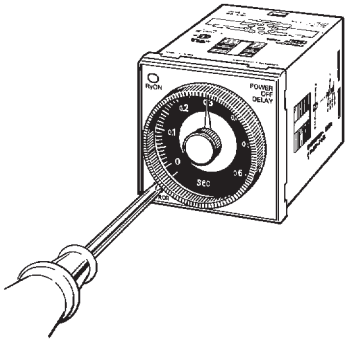


The time required for switching (0.05, 0.1, 0.25, or 0.5 second) from the star operation to the delta operation of the H3CR-G can be selected with the star-delta transfer time selector at the lower right corner of the front panel.



- **H3CR-H Power OFF-delay Timers**

A time range (0 to 0.6, 0 to 1.2, 0 to 6, and 0 to 12) is selected with the time range selector at the lower left corner of the front panel. No time unit selector is available. When ordering the H3CR-H, specify S (for the second unit) or M (for the minute unit) for your H3CR-H.

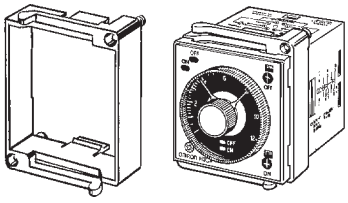


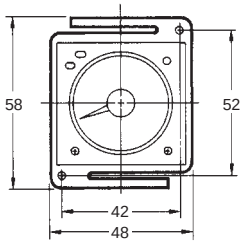
Dimensions

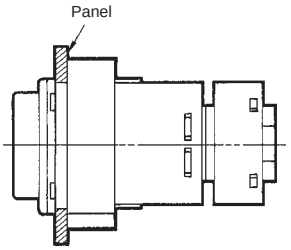
Note: The undermentioned is common for all H3CR-F/G/H models.

Note: All units are in millimeters unless otherwise indicated.

Dimensions with Flush Mounting Adaptor Y92F-30



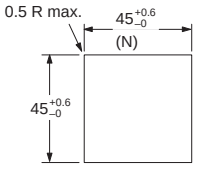




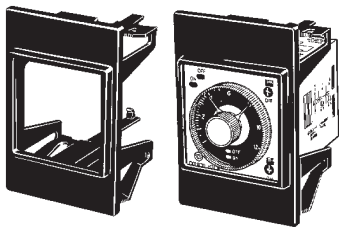
Note: The adapters for two or more timers mounted in a vertical line are different in orientation from those mounted in a horizontal line.

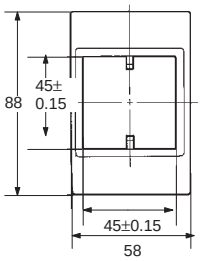
N can be obtained as follows (n: the number of H3CR models arranged side by side)
Without a Cover: $N = (48n - 2.5)\ ^{+1}/_{-0}$
With the Protective Cover: $N = (51n - 5.5)\ ^{+1}/_{-0}$
With the Panel Cover: $N = (50n - 4.5)\ ^{+1}/_{-0}$

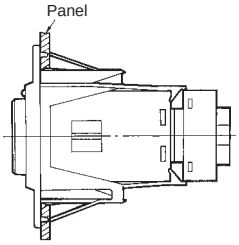
Panel Cutout



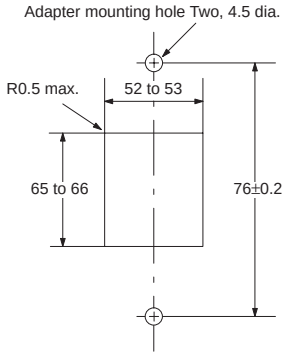
Dimensions with Flush Mounting Adaptor Y92F-73/-70





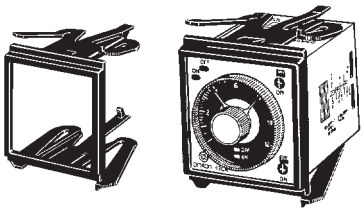


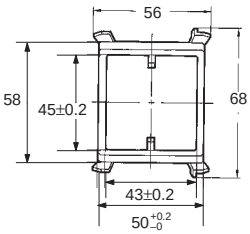
Panel Cutout

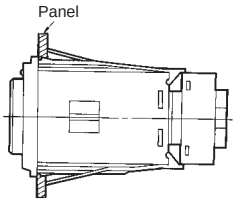


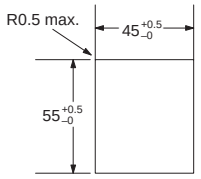
Note: The mounting panel thickness should be 1 to 3.2 mm.

Dimensions with Flush Mounting Adaptor Y92F-74/-71



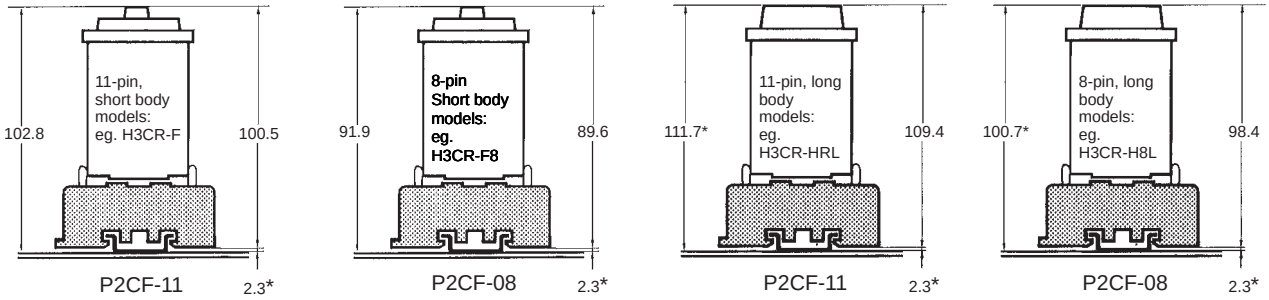






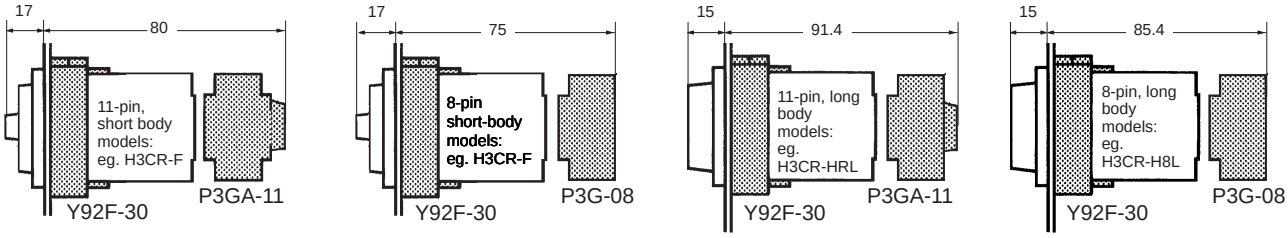
Note: The mounting panel thickness should be 1 to 3.2 mm.

Track Mounting



*These dimensions vary with the kind of DIN track (reference value).

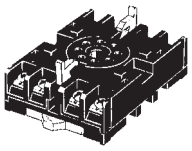
Flush Mounting

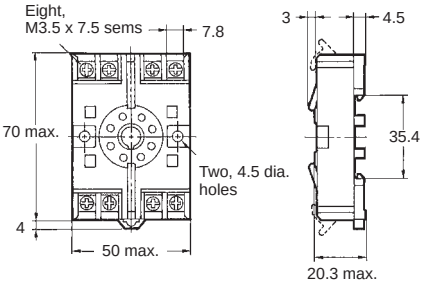


■ Accessories (Order Separately)

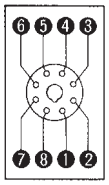
Track Mounting/ Front Connecting Socket

P2CF-08

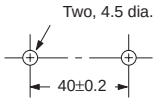




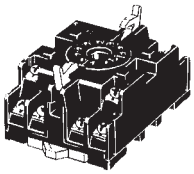
Terminal Arrangement/ Internal Connections (Top View)

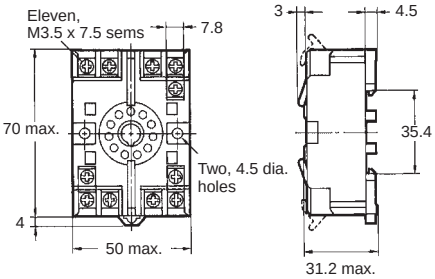


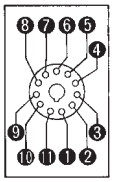
Surface Mounting Holes

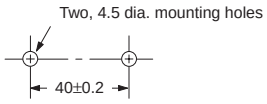


P2CF-11



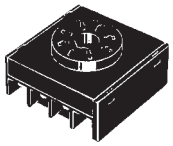


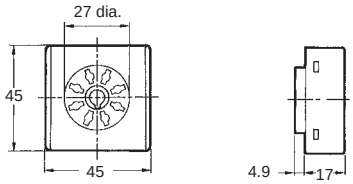




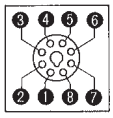
Back Connecting Socket

P3G-08

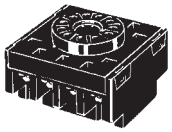


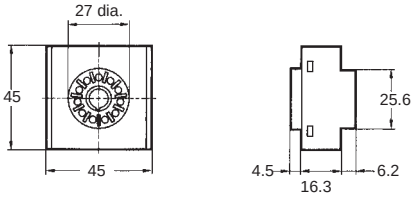


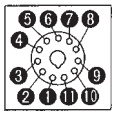
Terminal Arrangement/ Internal Connections (Bottom View)



P3GA-11

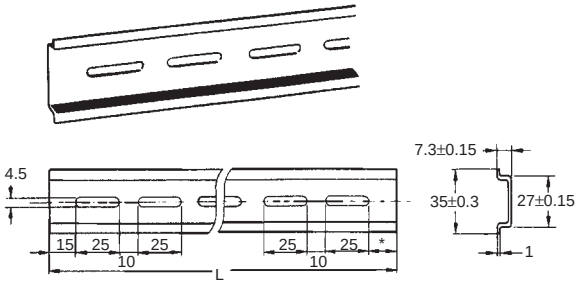




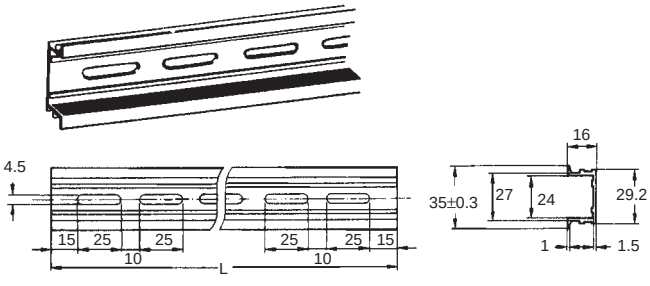


Mounting Track

PFP-100N, PFP-50N



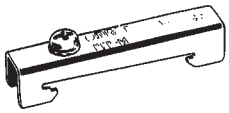
PFP-100N2

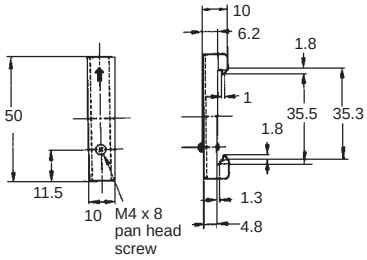


L: Length

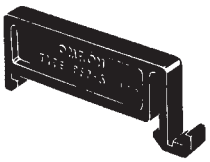
1 m	PFP-100N
50 cm	PFP-50N
1 m	PFP-100N2

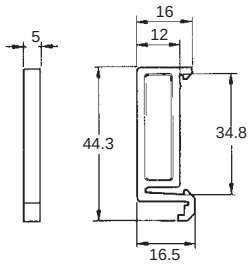
End Plate
PFP-M





Spacer
PFP-S





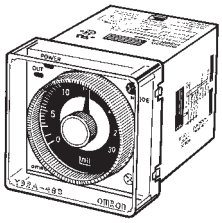
Protective Cover
Y92A-48B

The protective cover protects the front panel, particularly the time setting section, against dust, dirt, and water. It also prevents the set value from being altered due to accidental contact with the time setting knob.

Note: 1. The Y92A-48B Protective Cover is made of a hard plastic and therefore it must be removed to change the timer set value.

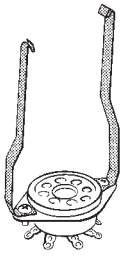
2. The Protective Cover cannot be mounted if the Panel Cover (sold separately) is used on the Timer.

Y92A-48B

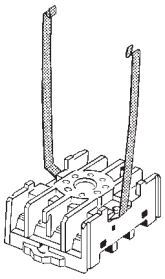


Hold-down Clip

Y92H-7/-1
For PL08 and PL11 Sockets



Y92H-8/-2
For PF085A Socket



Precautions

Note: The undermentioned is common for all H3CR-F/G/H models.

■ Changing of Setting

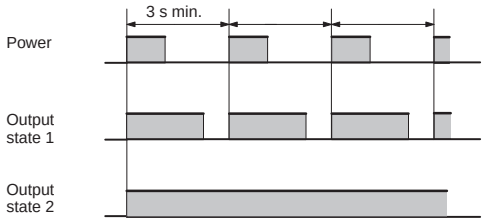
NOTICE: Do not change the time unit, time range, or operation mode while the timer is in operation or malfunction could result.

■ Wiring (H3CR-H)

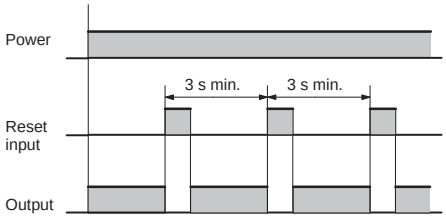
The H3CR has a high impedance circuit. Therefore, the H3CR may not be reset if the H3CR is influenced by inductive voltage. In order to eliminate any influence of inductive voltage, the wires connected to the H3CR must be as short as possible and should not be installed alongside power lines. If the H3CR is influenced by inductive voltage that is 30% or more of the rated voltage, connect a CR filter with a capacitance of approximately 0.1 μF and a resistance of approximately 120 Ω or a bleeder resistor between the power supply terminals. If there is any residual voltage due to current leakage, connect a bleeder resistor between the power supply terminals.

■ Operation (H3CR-H)

An interval of 3 s minimum is required to turn on the H3CR after the H3CR is turned off. If the H3CR is turned on and off repeatedly with an interval of shorter than 3 s, the internal parts of the H3CR may deteriorate and the H3CR may malfunction.



After the forced reset function of the H3CR is activated, an interval of 3 s minimum is required to activate the forced reset function again. If the forced reset function is activated repeatedly with an interval of shorter than 3 s, the internal parts of the H3CR may deteriorate and the H3CR may malfunction.



If it is required that the output be turned on repeatedly with an interval of shorter than 3 s, consider use of the H3CR-A in mode D (signal OFF-delay).

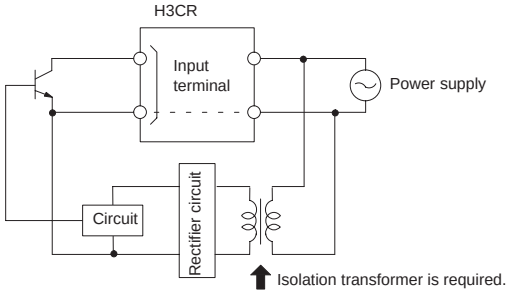
■ Power Supplies (H3CR-H)

An AC power supply can be connected to the power input terminals without regarding polarity. A DC power supply must be connected to the power input terminals as designated according to the polarity of the terminals.

A DC power supply can be connected if its ripple factor is 20% or less and the mean voltage is within the rated operating voltage range of the Timer.

Connect the power supply voltage through a relay or switch in such a way that the voltage reaches a fixed value at once or the Timer may not be reset or a timer error could result.

For the power supply of an input device, use an isolating transformer, of which the primary and secondary windings are mutually isolated and the secondary winding is not grounded.



The H3CR-H has a large inrush current; provide sufficient power supply capacity. If the power supply capacity is too small, there may be delays in turning ON the output.

The power supply circuit of any H3CR-F□ 100-to-240-VAC model, and H3CR-G□ 100/110/120-VAC and 200/220/240-VAC model is a switching circuit. If the power line connected to the power supply circuit has a transformer with high inductance, a counter-electromotive voltage will be induced by the inductance. To suppress the voltage, apply a CR filter to the power supply line.

■ Inrush Current

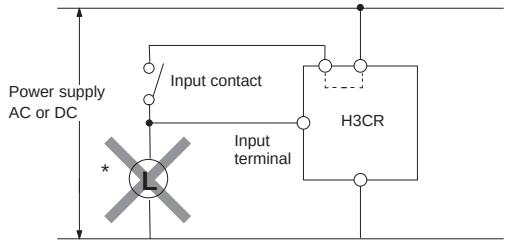
Model		Voltage	Applied voltage	Inrush current (peak value)	Time
H3CR-F		24 VAC/DC	26.4 VAC	0.7 A	10 ms
			26.4 VDC	1.1 A	9.4 ms
		12 VDC	13.2 VDC	52 mA	3.3 ms
		48 to 125 VDC	137.5 VDC	0.40 A	9.1 ms
H3CR-H	S-series	100/110/120 VAC	132 VAC	1.05 A	111 ms
		200/220/240 VAC	264 VAC	1.07 A	119 ms
		24 VAC/DC	26.4 VAC	1.26 A	133 ms
			26.4 VDC	0.85 A	137 ms
		48 VDC	52.8 VDC	0.73 A	112 ms
		100 to 125 VDC	137.5 VDC	0.62 A	109 ms
	M-series	100/110/120 VAC	132 VAC	1.02 A	364 ms
		200/220/240 VAC	264 VAC	1.03 A	323 ms
		24 VAC/DC	26.4 VAC	1.21 A	478 ms
			26.4 VDC	0.87 A	560 ms
		48 VDC	52.8 VDC	0.71 A	384 ms
		100 to 125 VDC	137.5 VDC	0.62 A	380 ms

Note: 1. The above figures are all approximations and should be used for reference only.

2. The inrush current is given mainly for DC models for the required power supply design specifications. For the H3CR-H, the inrush current is also given for 100/110/120-VAC and 200/220/240-VAC models because these models have higher inrush currents than other series.

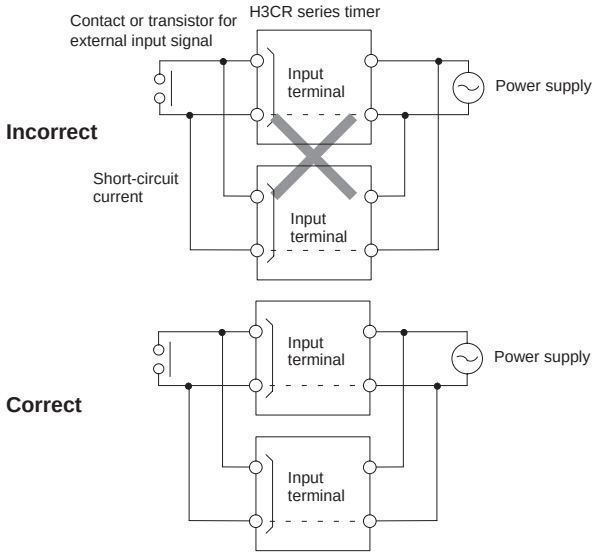
■ Input/Output (H3CR-H)

An appropriate input is applied to the input signal terminal of the Timer when the input terminal for the input signal is short-circuited. Do not attempt to connect any input terminal to any terminal other than the input terminal or to apply voltage across other than the specified input terminals or the internal circuits of the Timer may be damaged.



*Do not connect a relay or any other load between these two points, otherwise the internal circuit of the Timer may be damaged due to the high-tension voltage applied to the input terminals.

When connecting a relay or a transistor as an external signal input device, pay attention to the following points to prevent short-circuiting due to a sneak current to the transformerless power supply.
If a relay or transistor is connected to two or more Timers, the input terminals of those Timers must be wired properly so that they will not be different in phase or the terminals will be short-circuited to one another (refer to the figures below).



■ Environment

When using the Timer in an area with excess electronic noise, separate the Timer, wiring, and the equipment which generates the input signals as far as possible from the noise sources. It is also recommended to shield the input signal wiring to prevent electronic interference.
Organic solvents (such as paint thinner), as well as very acidic or basic solutions can damage the outer casing of the Timer.

■ Others

If the Timer is mounted on a control board, dismount the timer from the control board or short-circuit the circuitry of the power board before carrying out a voltage withstand test between the electric circuitry and non current-carrying metal part of the Timer, in order to prevent the internal circuitry of the Timer from damage.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. L86-E1-2B **In the interest of product improvement, specifications are subject to change without notice.**

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